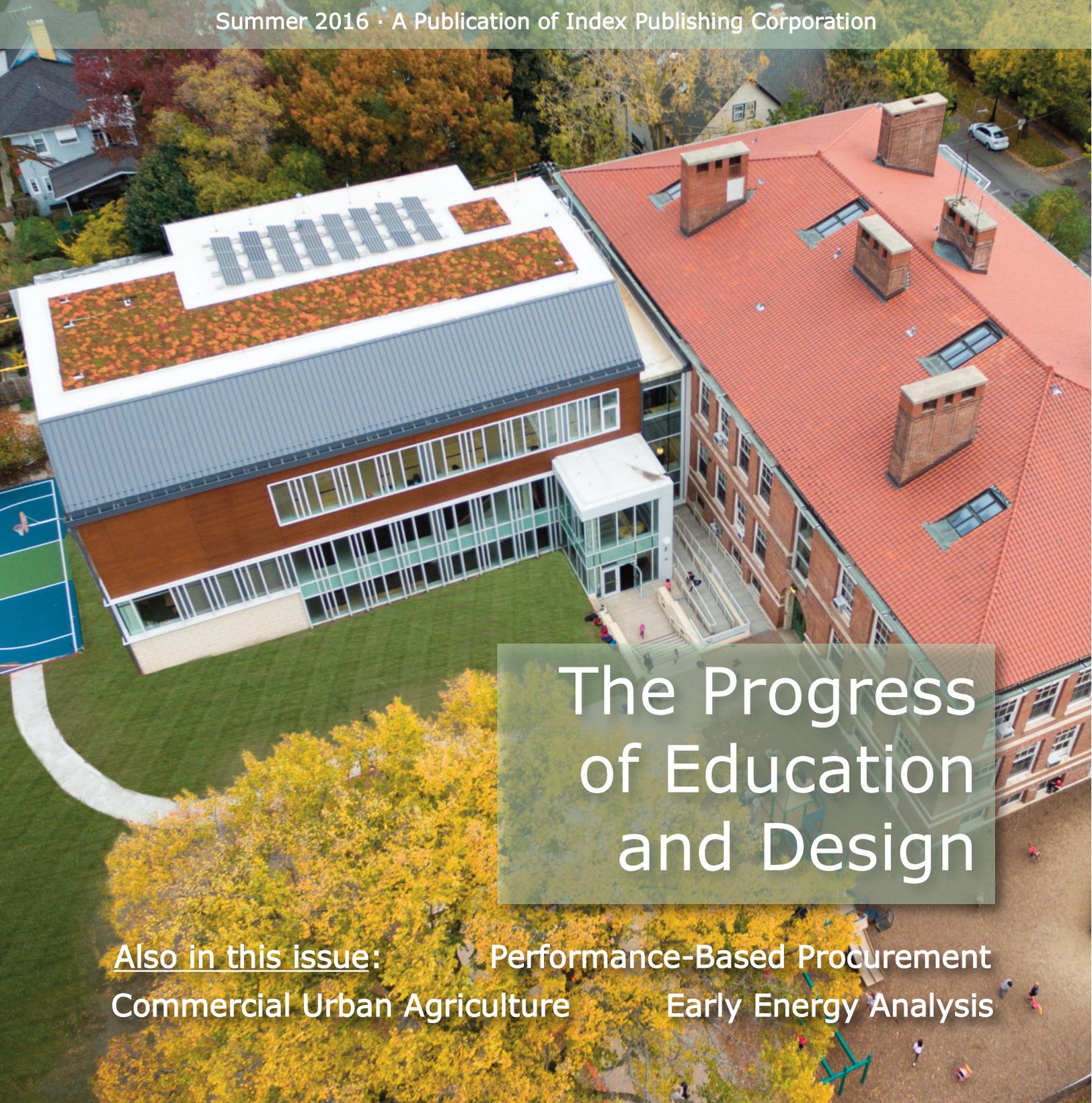




SUSTAINABLE CHICAGO

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The Progress
of Education
and Design

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Commercial Urban Agriculture

Performance-Based Procurement

Early Energy Analysis



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Chiaravalle Montessori: Progressive in Education, Progressive in Design

By Matt Baker

Architecture can be at its most expressive when the intended use is nontraditional. Montessori schools, which use a time-tested yet unorthodox educational technique, require spaces that one might not find in a conventional elementary classroom. It should be no surprise then that a progressive teaching method begets progressive building design.

The new North Wing at Chiaravalle Montessori School provides the Evanston campus a stunning, open space that embodies this progressive approach. Cannon Design created the \$7 million, 19,000 square foot addition with the aim of foster-

ing both collaboration and independence among the student body.

There are several components inherent in any Montessori school, such as multi-age classrooms, large blocks of uninterrupted time to work and guided choice of activity. The overarching goal is to instill in students self-reliance and developmental readiness. “Everyone has within them something special to bring into the world,” said Bethany Caldwell, the Director of Communications at Chiaravalle, “if you can get out of their way and guide and nurture and set up environments that make it enticing.”



Images: James Steinkamp Photography

The Think Tank is a favorite spot among the students, staff and even parents. Exterior windows bring light in from outside while interior windows allow one to see the full extent of the school, from the Hub all the way back to the original entrance doors in the Burnham building.



The acoustic walls of the Music & Movement Studio (above) are foldable, allowing the room to open up to the Hub; the new gymnasium (below) is twice as large as the previous one and has allowed the school to increase the number of sports available to the students.



One concept of physical design that is common to both Montessori and sustainability is an enhanced sense of community. When parents and students first enter the school, they encounter a living lobby that bridges the old and new wings of the building. Adjacent to this is the Hub, a central space that connects the first two stories via what the school refers to as the Gathering Stairs. Here, performances and community assemblies can be con-

ducted, as well as day-to-day school functions. Attached to this are separate drama and music studios, each of which can work singularly or with the Hub thanks to folding, paneled walls.

Up the Gathering Stairs, that sense of community and connectedness continues, as the interdisciplinary DaVinci Studio, Think Tank, Global Learning Library and other rooms look out into a common hallway through interior windows.

“What’s been most exciting is the interface of different programs,” said Clare Heath, Chiaravalle’s Educational Program Director. “Just as you go into the community and you might run into a neighbor or someone older or younger than you, this space functions in that same way, as a pedestrian mall in some sort of sense.”

Running into neighbors isn’t just a metaphor, as Chiaravalle students regularly go out into the surrounding community, for instance performing prairie restoration with groups like Mighty Acorns and yarn bombing areas near the school. The older students are actually housed in another facility one block north of the main campus, and have autonomy to travel between the two locations

when needed. This reinforces both their sense of community and self-reliance.

Evident in the new design is a fluidity and pliability of space—another tenet of both Montessori and sustainability. The contrasts are evident when looking at the original structure and the new one. Famed architect Daniel Burnham designed the main building in 1898. Though quite beautiful, it’s also a testament to its time with classrooms cloistered off

from each other and few common areas.

In the new addition, large windows provide views of the adjacent park, bringing nature in to the students. They also supply ample daylighting; nearly 80% of the new space is daylit. In addition to bringing natural light in, there are strong visual connections through both the original structure and the new wing. “That was a very deliberate design, to create that connection and a way to merge the older building with the new addition,” said Stuart Brodsky, Senior Vice President with Cannon Design.

Chiaravalle features a number of spaces that might be out of place in a traditional school, but perhaps the best example of how well sustainability and the Montessori Method coexist is a small, nondescript room.

The library is similar to any you would see in elementary schools across the country, with books, cozy seating and computers. It even has a card catalog. One of the entrance/exits to Chiaravalle’s library, however, is a little different. A small anteroom fills a void in the design that is just about the perfect size for something utilitarian like a maintenance closet.

Instead, Cannon Design put here a flexible, indefinable space. It can be a transition area for younger children coming and going to the library. It can be a breakout room where a small group can meet. “You leave some spaces unfinished when you move into a house. You get to know how you’re going to use it and what its need is,” said Caldwell. “That’s been this room’s role this year, the space we’re figuring out how it serves us and the kids.”



A greater sense of community is evident in the new lobby (above), which gives students and parents a central access point to the school and opens up to other areas of the building; true to its name, the Hub (below) is the axis on which the whole school turns, connecting the lobby to the rest of the school, the first floor to the second and the inside with the outside.



To Brodsky, this is a trend that has recently even made its way to traditional schools. “We are designing spaces like this, that are half a classroom in size or smaller, because learning needs to be differentiated,” he said. “Students and teachers gather and engage in many different ways and students do their own thing. Particularly in a program like this, they



Before beginning the project, Chiaravalle asked the children what they wanted to see in the new wing of the school. “Giving students a voice is such a big part of our identity and philosophy,” said Bethany Caldwell. “That was a successful part for us, because we came out of it with priorities which were design drivers that made a huge difference.”

need to have spaces like this that aren’t so hard coded.”

While efficient use of space is evident in the design, it’s also one impetus for the very creation of the new wing. There was a two-story structure where the new addition stands, a post-war building that was in poor shape and misaligned with the original, three-story building. “There was so much wasted space, said Caldwell. “You’d move through these little warrens and say, ‘We could be teaching here.’”

From the outside in, sustainability is at the heart of the LEED Platinum project. A refurbished basketball court is part of a shared use park to the north of the school. Beneath it are 15 geothermal wells, 500 feet deep, that balance the air handling load at Chiaravalle. The individual heat pumps throughout the building promote more individual control and better indoor air quality.

The school is located in one of Evanston’s historical districts, so there were some restrictions on materials and appearance. Matching the Burnham

building’s brick would have been improbable due to cost, availability and weight. Exterior panels by Resysta not only met the historical committee’s appearance and temporal guidelines—they match the brick in color and have been used in Europe for several decades—but they are made from rapidly renewable materials like rice husks.

“We avoided materials that require refinishing or cleaning in a way that’s harmful to the environment,” Brodsky said. Linoleum and rubber floors require no finish or wax, so from a maintenance standpoint, they are easier on the environment and use less water to clean. Recycled materials make up 42% of furnishings used on the project and during construction, over 80% of construction and demolition waste was diverted from landfills.

Low flow, sensed urinals, faucets and fixtures combine for a building that meets or exceeds LEED levels and saves 42% more water than the baseline. The drinking fountains all accommodate water bottle refilling. In terms of energy, the building con-

sumes less than half of the electricity set in ASHRAE baselines. Much of this comes from high-efficiency lighting and occupancy/daylight sensors.

Atop the building, Chiaravalle installed a 7 kW photovoltaic array and a vegetated roof. “This was a very small site, in the sense that this building is built essentially to the setbacks and in the maximum volume that we could build,” said Brodsky. “So the goal was to make every inch of this building of value, including the roofscape.”

Tenant education has always been an important part of sustainability; if the users of the building aren’t using it properly, that extra effort to design intelligently could go to waste. That education takes on a magnified role when the tenants are 350 elementary-age students. A dashboard was installed in one hallway, displaying real-time information such

as the temperature of the water going through the geothermal system and the performance of the photovoltaic array, as well as basic information about sustainably sourced materials and the green roof. “Living through a construction project is not always fun, but there were some really cool learning opportunities for the kids,” said Heath. “We had kids do research on sustainability because they were exposed to it.”

Tasked with replacing a 60-year-old gymnasium, Chiaravalle was given an opportunity to grow beyond the strictures of their traditional schoolhouse, into the community and all while making use of the Montessori philosophies. The result will have far-reaching impacts not only on the environment, but on the children that the school maneuvers into adulthood. ↩



Located in Evanston’s lakefront historic district, and housed in a Daniel Burnham-designed, turn-of-the-century building, Chiaravalle Montessori had a number of challenges marrying the old building with the new. Yet they still managed to do so while integrating sustainability into the design, such as the green roof, photovoltaic array and geothermal system.